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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,501	11/19/2003	Jishnu Bhattacharjee	M-15260 US	8235

7590 08/13/2004
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EXAMINER

LEE, EUGENE

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/718,501

Applicant(s)

BHATTACHARJEE ET AL.

Examiner

Eugene Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/1/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: on page 8, line 4, the word "their" should be "there".

Appropriate correction is required.

Claim Objections

2. Claims 10 thru 15 are objected to because of the following informalities: the word "planar" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 thru 5, 8, and 10 thru 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 thru 5 recites the limitation "said spiral" in lines 3-5 of claim 1. There is insufficient antecedent basis for this limitation in the claim.

In line 5, it is unclear whether the applicant is referring to the first or second spiral inductor in the limitation "said spiral". Appropriate clarification and correction are required.

Claims 10 thru 15 recites the limitation "a second" in line 23 of claim 10. There is insufficient antecedent basis for this limitation in the claim.

It is unclear whether the applicant is referring to a second end or another second inductor. Appropriate clarification and correction are required.

Claims 4, 8, and 15 recites the limitation "first and second spiral inductors have thickness of between 1 and 4 um" and "plurality of planer spiral shaped inductors comprises a thickness of between 1 and 4 um". It is unclear whether the applicant is referring to the each of the inductors having a thickness of between 1 and 4 um or whether all the inductors combined have a thickness of 1 and 4 um. It appears from the applicant's specification (see page 4, lines 20-24) that each of the inductors have a thickness of between 1 and 4 um, however, appropriate clarification and correction are required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

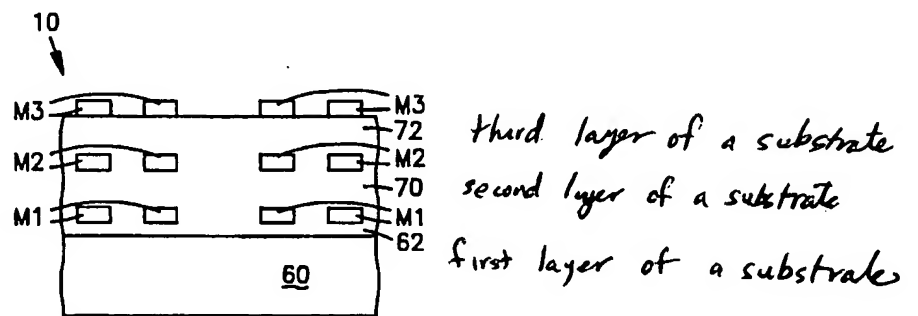
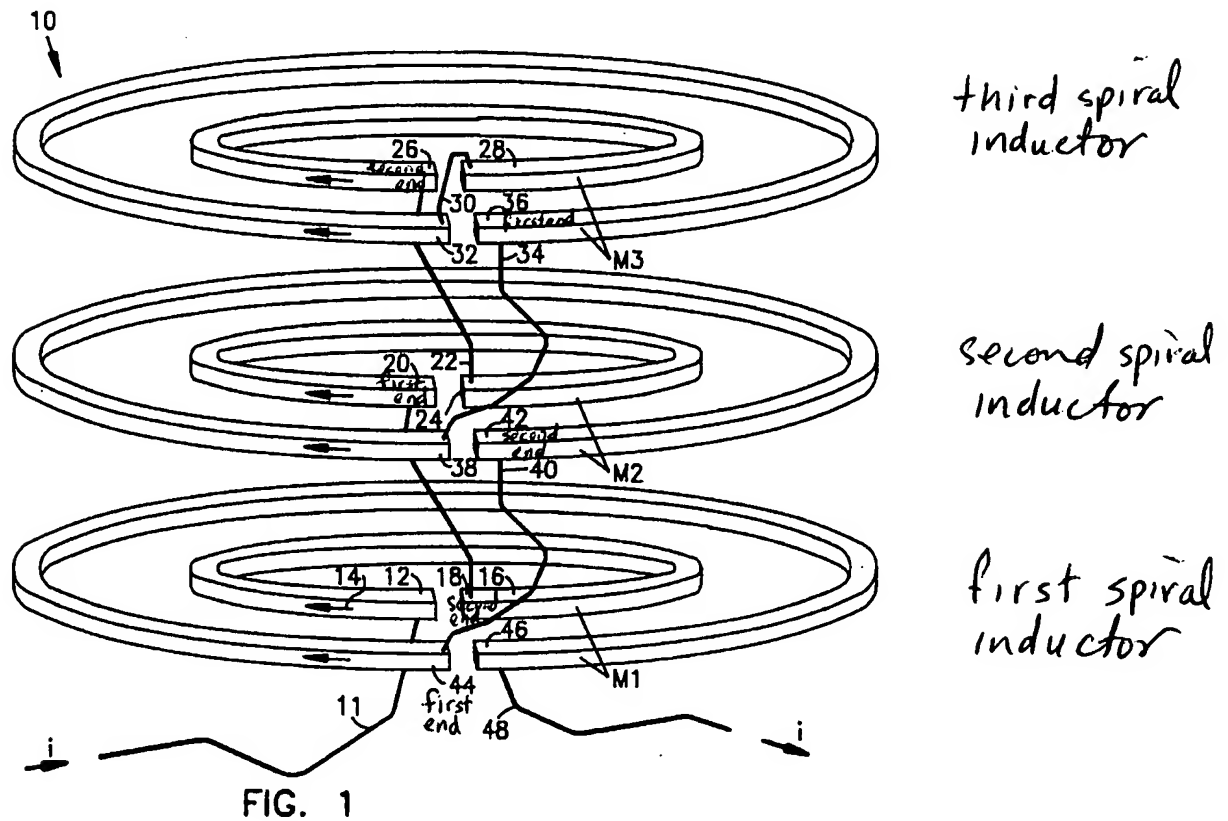
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 5 thru 7, 9, 10, and 12 thru 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Merrill et al. 5,610,433. Merrill discloses (see, for example, FIG. 1 and 2) a method for fabricating an inductor 10: forming a first metal layer (first spiral inductor) M1 having a first end 44 and second end 18 on an insulating layer (first layer of a substrate) 62; forming a second metal layer (second spiral inductor) M2 having a first end 20 and second end 42 on an insulating layer (second layer of said substrate) 70; and

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electrically coupling said first end 20 of second spiral inductor M2 to said second end 18 of said first spiral inductor M1 through a conductive via 16.



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Regarding claims 2 and 7, Merrill discloses (see, for example, FIG. 1 and 2) a third metal layer (third spiral inductor) M3 having a first end 36 and a second end 26 on an insulating layer (third layer of said substrate) 72. The first end 36 is electrically coupled to said second end 42 by via 34

Regarding claims 5, 9, and 14, see, for example, column 2, lines 28-29 wherein Merrill discloses the coils may be aluminum (Al).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. '433 as applied to claims 1, 2, 5-7, 9, 10, and 12-14 above, and further in view of Berthold et al. 6,717,503 B2. Merrill does not disclose said forming said first spiral inductor and forming said second spiral inductor each comprising forming each of said first and second spiral conductors into concentric shapes of at least two turns, wherein each turn is comprising of at least five segments. However, Berthold discloses (see, for example, FIG. 6) a coil (inductor) comprising segments 22. In column 2, line 60 until column 3, line 9, Berthold discloses the coil having a high quality factor which can readily be integrated into microelectronic circuits. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to form said first spiral inductor and forming said second spiral inductor each comprising forming each of said first and

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second spiral conductors into concentric shapes of at least two turns, wherein each turn is comprising of at least five segments in order to have a coil of high quality factor which can be readily be integrated into microelectronic circuits.

9. Claims 4, 8, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. '433 as applied to claims 1, 2, 5-7, 9, 10, and 12-14 above, and further in view of Yamazaki 6,002,161. Merrill does not disclose said first and second spiral inductors having a thickness of between 1 and 4 um. However, Yamazaki discloses (see, for example, column 6, lines 36-54) a spiral inductor comprising a metal layer thickness of 500 nm to 1 um (micron). It was well known in the art at the time of invention to use this thickness in order to form an adequate inductance without significantly increasing area. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have a thickness of between 1 and 4 um in order to form an adequate inductance without significantly increasing area, and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733.

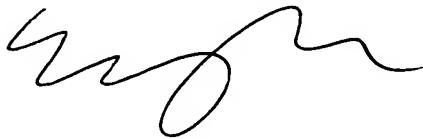
The examiner can normally be reached on M-F 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eugene Lee
July 26, 2004

A handwritten signature in black ink, appearing to be 'Eugene Lee', with a stylized, cursive script.